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## A New Species of *Holostaspella* (Arachnida: Acari: Macrochelidae) from Kalimantan, Indonesia

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A species of mite of the genus *Holostaspella* (Acari: Macrochelidae), collected from the ventral body surface of dung beetles in East Kalimantan, Indonesia, is described as new to science. This species, *H. katakurai* sp. nov., is similar to *H. mirabilis* Petrova and Taskaeva, 1964, but differs from the latter in the number of preanal setae on ventrianal shield and ornamentation of sternal shield. The present new species provides an exception to the general correlation between phoresy and absence of paranal extensions of the cribrum in the genus.

**Key Words:** *Holostaspella*, Macrochelidae, mites, phoresy, cribrum, Kalimantan, Indonesia.

### Introduction

The genus *Holostaspella* (Acari: Macrochelidae) is nearly cosmopolitan and comprises more than 30 species, three of which have been recorded in Indonesia: *Holostaspella berlesei* Krantz, 1967 from Sumatra, *H. foai* Berlese, 1910 from Java, and *H. moderata* Berlese, 1921 from Sumatra and Java (Berlese 1910, 1920; Krantz 1967; Takaku 2001). In the course of our study on macrochelid mites of Kalimantan, we found yet another species of this genus associated with dung beetles. It is described here as new to science.

The mite specimens were collected from the ventral surface of scarabaeid dung beetles and fixed in 70% ethyl alcohol. Specimens were mounted whole on slides in PVA (polyvinyl alcohol-lactic acid), after clearing in lactic acid.

In the description, all measurements are given as ranges in micrometres ( $\mu\text{m}$ ). Dorsal chaetotaxy follows Halliday (1987). Other terminology, especially the description of ventral ornamentation, follows Petrova and Taskaeva (1964) and Krantz (1967).

The holotype is deposited in the collection of the Museum Zoologicum Bogoriense (MZB)/Zoology Division, Center for Research in Biology-LIPI, Bogor, Indonesia, and a paratype is deposited in the Zoological Collections of the Graduate School of Science, Hokkaido University, Sapporo, Japan (ZIHU).

**Description*****Holostaspella katakurai* sp. nov.**

(Figs 1–8)

**Type series.** Holotype: female (MZB.Acar.2705), Bukit Suharto, Samarinda, East Kalimantan, 21–23 May 1993, U. Rosichon and D. C. Darling leg., *ex Paragymnopleurus maurus* Sharp, 1875. Paratype: female, Pujungan, Kayan Mentarang, East Kalimantan, 1 June 1993, U. Rosichon and D. C. Darling leg., *ex Catharsius molossus* (Linné, 1758).

**Female.** Length of dorsal shield 490–512.5, width at level of coxae II 205–242.5 (n=2). Living specimens pale yellow.

**Dorsum** (Fig. 1). Dorsal shield strongly punctate and ornamented; shield with 28 pairs of dorsal setae; j1 plumose, inserted on anterior protuberance of shield; j5, j6, z5, and J2 small and pectinate; seta z5 smaller than other setae, located anterior to level of j5; other dorsal setae long, pectinate; marginal setae long, each reaching to insertion of next seta behind.

**Venter** (Figs 2, 3). Length of sternal shield 87.5, width at level of coxae II 70–75 (n=2); surface punctate anterolaterally and also posteriorly to linea oblique posteriores (l.o.p.), leaving smooth area posteromedially. Shield with 3 pairs of simple setae, all of similar length. Metasternal shield small, oval, free; each shield with simple seta and anterior pore.

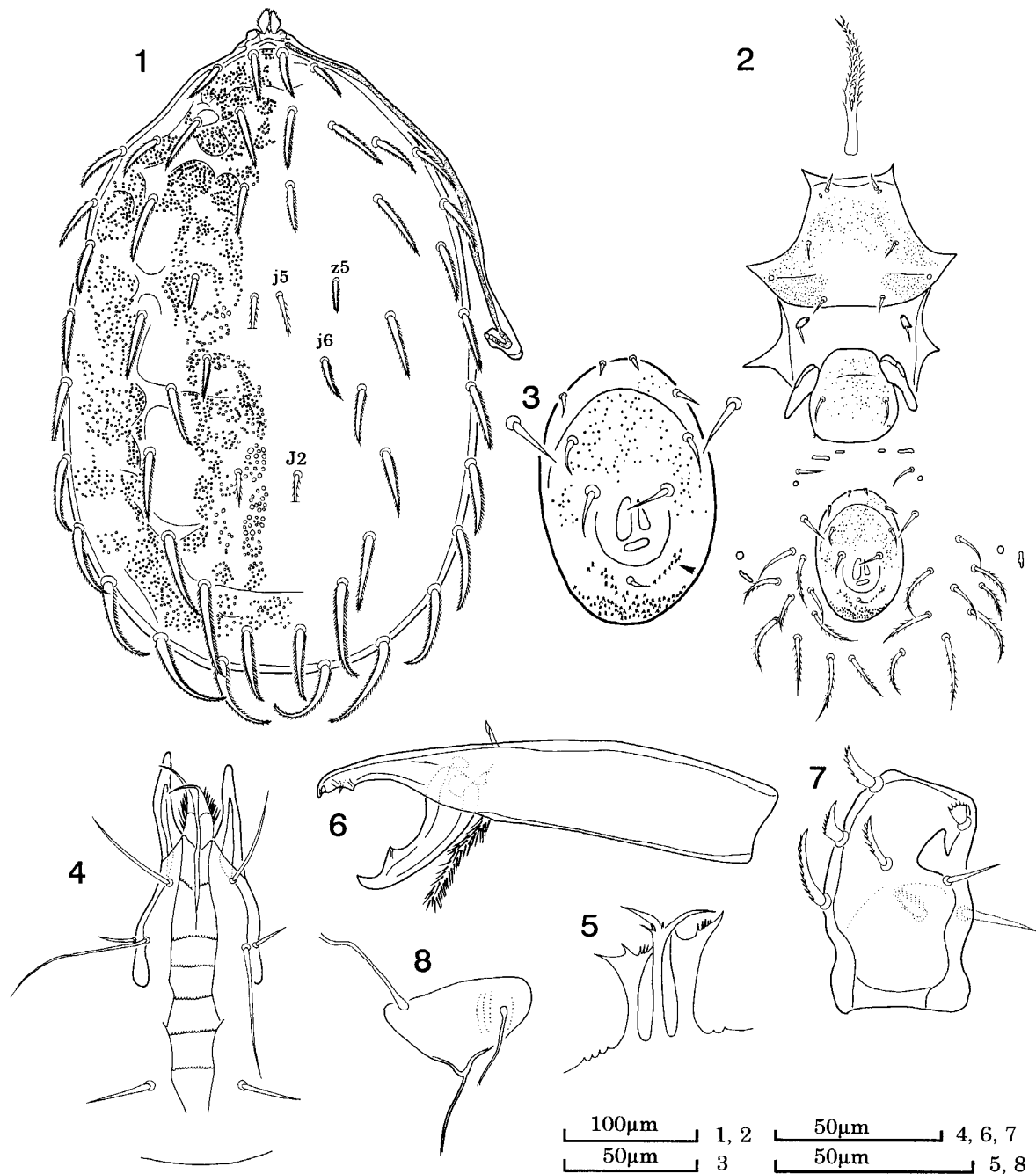
Epigynial shield broadened posteriorly; length 70–75, width 70–75 (n=2); surface punctate anteriorly. Shield with pair of simple lateral setae and pair of posterolateral pores.

Ventrianal shield oval, reduced, longer than wide; surface punctate anteriorly; length 100–102.5, width 65–70 (n=2); shield with 3 pairs of preanal setae, 1 pair of paranal setae, and 1 postanal seta; all setae simple; Jv2 shorter than other setae; Jv2–Zv2 preanal setae inserted on anterior edge of shield; Jv3 and paranal setae similar in length. Cribrum with paranal extensions (Fig. 3). Opisthogaster with more than 10 simple and pilose setae, and with pair of oblong metapodal shields. Postcoxal pore fused with podal shield. Peritreme joining stigmata at level between coxae III and IV. Two pairs of oblong platelets located between epigynial and ventrianal shield.

**Gnathosoma** (Fig. 4). Well developed and sclerotized; deutosternal groove with 5 transverse rows of denticles; 3 pairs of hypostomal setae and 1 pair of palpcoxal setae present; all setae simple; internal posterior hypostomal setae longer than other setae. Palpal chaetotaxy of trochanter, femur, and genu 2-5-6. Tectum (Fig. 5) with median process and pair of lateral elements; median process bifurcate distally and with small spicules; lateral margin serrate. Fixed digit of chelicera (Fig. 6) with membranous dorsal seta, robust median tooth, small distal tooth, *pilus denticilis*, and terminal hook; movable digit with median tooth and terminal hook; length of fixed digit 120–132.5, length of movable digit 40–42.5 (n=2).

**Legs.** Most leg segments with both simple and pilose setae, except coxa I to tarsus I and trochanters II and IV with only simple setae, and coxa IV and femur IV with only pilose setae; spur on femur II small (Fig. 7). Leg chaetotaxy typical for this genus; genu IV with 6 simple and pilose setae arranged as follows: 1, 2/1, 2/0, 0.

Leg length (except ambulacrum, n=2): leg I, 295–305; leg II, 300–307.5; leg III, 260–262.5; leg IV, 317.5–335.



Figs 1-8. *Holostaspella katakurai* sp. nov., holotype, female. 1, dorsum, with some setae labelled; 2, venter; 3, ventrianal shield (arrow indicates paranal extensions); 4, ventral view of gnathosoma; 5, tectum; 6, chelicera; 7, femur II; 8, *saccus foemineus*.

*Saccus foemineus* (Fig. 8). Sacculi fused; cornu rounded distally.

**Other stages.** Unknown.

**Etymology.** This species is named after Professor Haruo Katakura, who generously supervised SH and supported our work in Indonesia.

**Remarks.** The present species is similar to *Holostaspella mirabilis* Petrova and Taskaeva, 1964 described from Yunnan Province, China (Petrova and

Taskaeva 1964). However, *Holostaspella katakurai* is distinguishable from *H. mirabilis* by: 1) the ventrianal shield having three pairs of preanal setae (two pairs in *H. mirabilis*); and 2) the sternal shield is only punctate anteriorly and in the region posterior to l.o.p. (entirely punctate in *H. mirabilis*).

Judging from the morphological similarities between *H. mirabilis* and the present species, the present species is assignable to the *mirabilis* group proposed by Filipponi and Pegazzano (1967). The diagnosis of the *mirabilis* group, consisting of *H. mirabilis* and *H. katakurai*, is revised as follows: ventrianal shield reduced and with two or three pairs of preanal setae in female; and sternal shield without sculptured ornamentation.

It has been postulated that the cribrum in the ventrianal shield in mesostigmatic mites serves as a platform for dispersion of a pheromone produced by adjacent cribral glands (Krantz and Redmond 1988). Non-phoretic, soil-inhabiting macrochelid mites generally have well-developed paranal extensions of cribrum. On the other hand, in the adult stage of most phoretic species the cribrum is restricted to post-anal strips at the ventrianal margin (Krantz 1998a), although exceptions exist [e.g., females of *Macrocheles longipes* Berlese, 1910 recorded from dung beetles and females and males of *Lordoscheles desaegeri* Krantz, 1961 recorded from a coprophagous insect (Krantz 1988, 1998b)]. Paranal extensions are also known in immatures of several phoretic species, such as the deutonymph of *Macrocheles halidayi* Walter and Krantz, 1986 from dung beetles and the deutonymph of *M. mycotrupetes* Krantz and Mellott, 1968 (Krantz and Royce 1992; Takaku 1998). The adults of the present species are somewhat exceptional in that the anterior part of the cribrum extends to the level of the paranal setae (Fig. 3), as in non-phoretic macrochelids, despite their being phoretic. Since paranal extensions have thus far been observed widely in soil-inhabiting macrochelid species, less widely in immatures of phoretic species, and only sporadically in adults of distantly related phoretic species, this character state may be plesiomorphic.

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### References

- Berlese, A. 1910. Lista di nuove specie e nuovi generi di Acari. Redia 6: 242–271.
- Berlese, A. 1920. Centuria quinta di Acari nuovi. Redia 14: 188–189.
- Filipponi, A. and Pegazzano, F. 1967. Contributo alla conoscenza del genere *Holostaspella*

- Berlese, 1903 (Acari: Mesostigmata: Macrochelidae). Redia 50: 219–259.
- Halliday, R. B. 1987. Further observations on the dorsal idiosomal chaetotaxy in the Macrochelidae (Acarina). International Journal of Acarology 13: 51–53.
- Krantz, G. W. 1967. A review of the genus *Holostaspella* Berlese, 1904 (Acarina: Macrochelidae). Acarologia 9 (Suppl.): 91–146.
- Krantz, G. W. 1988. On the identity of six Berlese species of *Macrocheles* (Acari: Macrochelidae): descriptions, redescrptions, and new synonymies. Canadian Journal of Zoology 66: 968–980.
- Krantz, G. W. 1998a. Reflections on the biology, morphology and ecology of the Macrochelidae. Experimental and Applied Acarology 22: 125–137.
- Krantz, G. W. 1998b. Observations on five rarely collected genera of Macrochelidae (Acari: Mesostigmata) associated with insects. Acarologia 39: 95–109.
- Krantz, G. W. and Redmond, B. L. 1988. On the structure and function of the cribrum, with special reference to *Macrocheles perglaber* (Gamasida: Macrochelidae). Pp. 179–185. In: Channabasavanna, G. P. and Viraktamath, C. A. (Eds) *Progress in Acarology*, Vol. 1. Oxford & IBH Publ., New Delhi, 523 pp.
- Krantz, G. W. and Royce, L. A. 1992. Descriptions of the immature stages of *Macrocheles mycotrupetes* Krantz and Mellott (Acari: Macrochelidae), with remarks on form, function, and phoresy. Acarologia 33: 305–311.
- Petrova, A. D. and Taskaeva, E. Z. 1964. Gamasoid mites (Parasitiformes, Gamasoidea) from Southern China (1st Communication). Bulletin de la Société des Naturalistes de Moscou. Section Biologique 69: 47–61. [In Russian]
- Takaku, G. 1998. Descriptions of immature stages and male of *Macrocheles hallidayi* Walter and Krantz, 1986 (Acari: Macrochelidae). Journal of the Acarological Society of Japan 7: 29–38.
- Takaku, G. 2001. Macrochelid mites (Acari: Macrochelidae: *Macrocheles*, *Holostaspella*) associated with scarabaeid beetles in Sumatra, Indonesia. Tropics 10: 497–507.